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EXAMINER

TADESSE, YEWEBDAR T

ART UNIT PAPER NUMBER

1734

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/518,517

Applicant(s)

HOHENWARTER, KARL-HEINZ

Examiner

Yewebdar T. Tadesse

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 13 is/are rejected.
- 7) ☒ Claim(s) 11-12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12212004.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claim 3 is objected to because of the following informalities: in claim 3, line 1, applicant uses the word "it". It is suggested that the element what the word "it" designated for be included in the claim. For the purpose of examination "the device for treating disc-shaped objects" is assumed. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 3-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Tung et al (US 6,220,771).

With respect to claim 1, Tung et al discloses (see Figs 3-4; column 3, lines 30-33) a device for treating disk-shaped objects using liquids including: a carrier (chuck 60 with wafer supporting means, see column 3, lines 3-4) for receiving the disk-shaped object; a liquid supply device (nozzle head 82) for applying liquid onto a disk-shaped object (wafer) located on the carrier; and a liquid catch ring (cover 80 with rim portions), which is positioned substantially coaxially to the carrier (chuck 60 with wafer supporting means) and is rotatable around the axis of the liquid catch ring, the liquid catch ring

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(cover 80 with rim portions) being movable relative to the carrier (part of chuck 60 with wafer supporting means; see column 3, lines 26-27).

Regarding claim 3, Tung et al discloses (see Fig 3; column 3, lines 36-40) devices (elevating mechanism) for axial displacement of carrier (chuck 60) and liquid catch ring (cover 80 with rim portions) in relation to one another.

With respect to claim 4, In Tung et al the carrier (chuck 60) is rotatable.

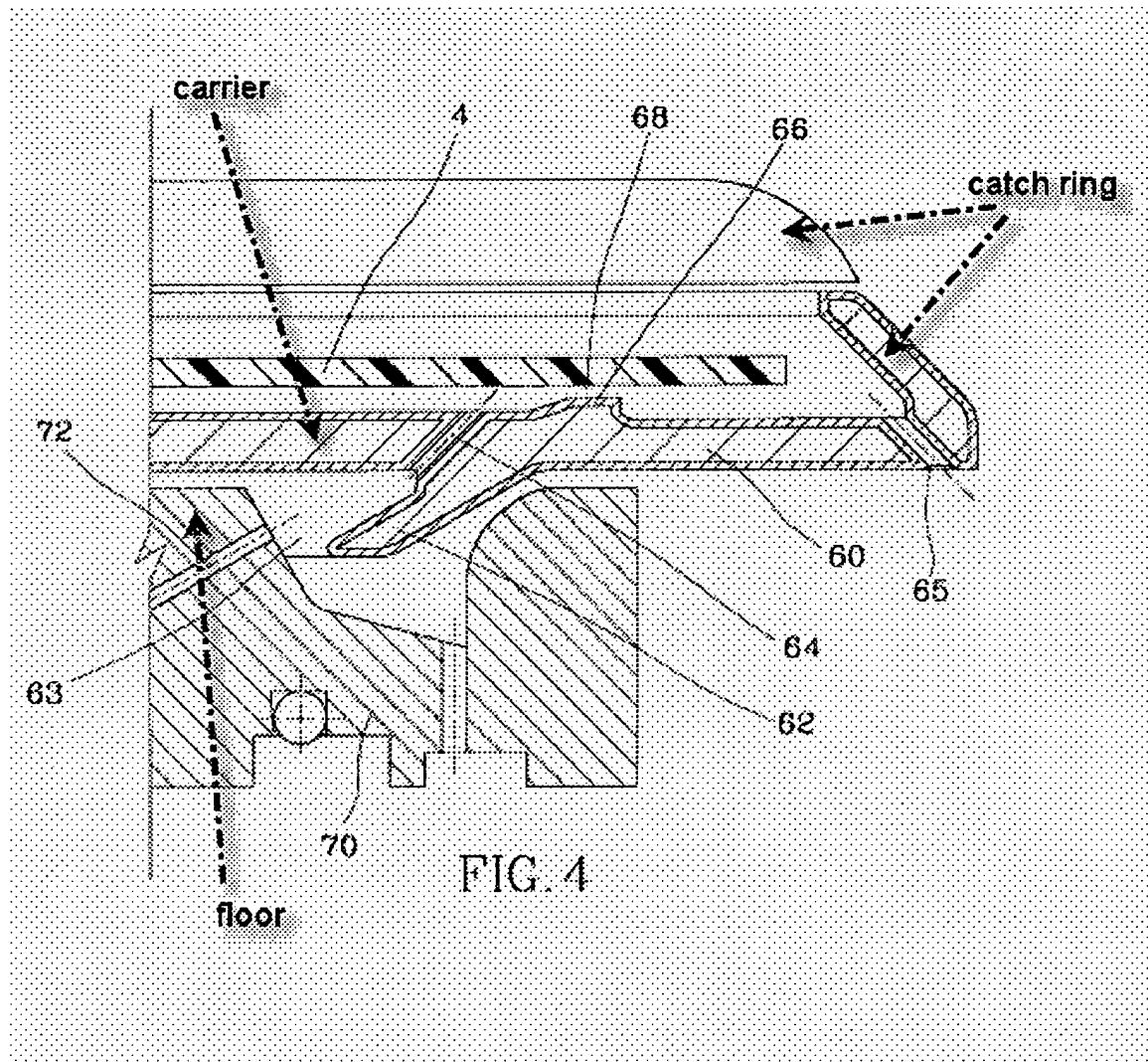
As to claim 5, in Tung et al the diameter of the inner surface of the liquid catch ring (cover 80 with rim portions) varies in the axial direction.

Regarding claim 6, Tung et al discloses that the liquid catch ring (cover 80 with rim portions) has radial passages (holes 65), through which the liquid may be conveyed radially outward (see column 3, lines 58-60).

As to claim 7, in Tung et al the radial passages (holes 65) are located at the points of the liquid catch ring (cover 80 with rim portions) at which the diameter of inner surface is at least locally greatest.

As to claim 8, in Tung et al the inner surface of the liquid catch ring (cover 80 with rim portions) is implemented as conical.

Regarding claim 9, in Tung et al a floor (see attached Fig 4 below), which rises radially inward, is shaped onto the bottom end of the liquid catch ring (see Fig 3).



4. Claims 1, 3-10 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Hung et al (US 6,027,602).

With respect to claim 1, Hung et al discloses (see Fig 1; column 3, lines 41-50) a device for treating disk-shaped objects using liquids including: a carrier (part of chamber 50 with vacuum contacts 51, see attached Fig 1) for receiving the disk-shaped object; a liquid supply device (dispenser 61) for applying liquid onto a disk-shaped object located

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on the carrier; and a liquid catch ring (cover 59, sidewalls 50a and 50b), which is positioned substantially coaxially to the carrier (part of chamber 50 with vacuum contacts 51) and is rotatable around the axis of the liquid catch ring (cover 59, sidewalls 50a and 50b), the liquid catch ring (cover 59) being movable relative to the carrier (part of chamber with vacuum contacts 51).

Regarding claim 3, Hung et al discloses (see Fig 1) devices (shaft 60 and air bearings 30) for axial displacement of carrier (part of chamber 50 with vacuum contacts 51) and liquid catch ring (cover 59) in relation to one another.

With respect to claim 4, In Hung et al the carrier (part of chamber 50 with vacuum contact) is rotatable.

As to claim 5, in Hung et al the diameter of the inner surface of the liquid catch ring (cover 59, sidewalls 50a and 50b) varies in the axial direction.

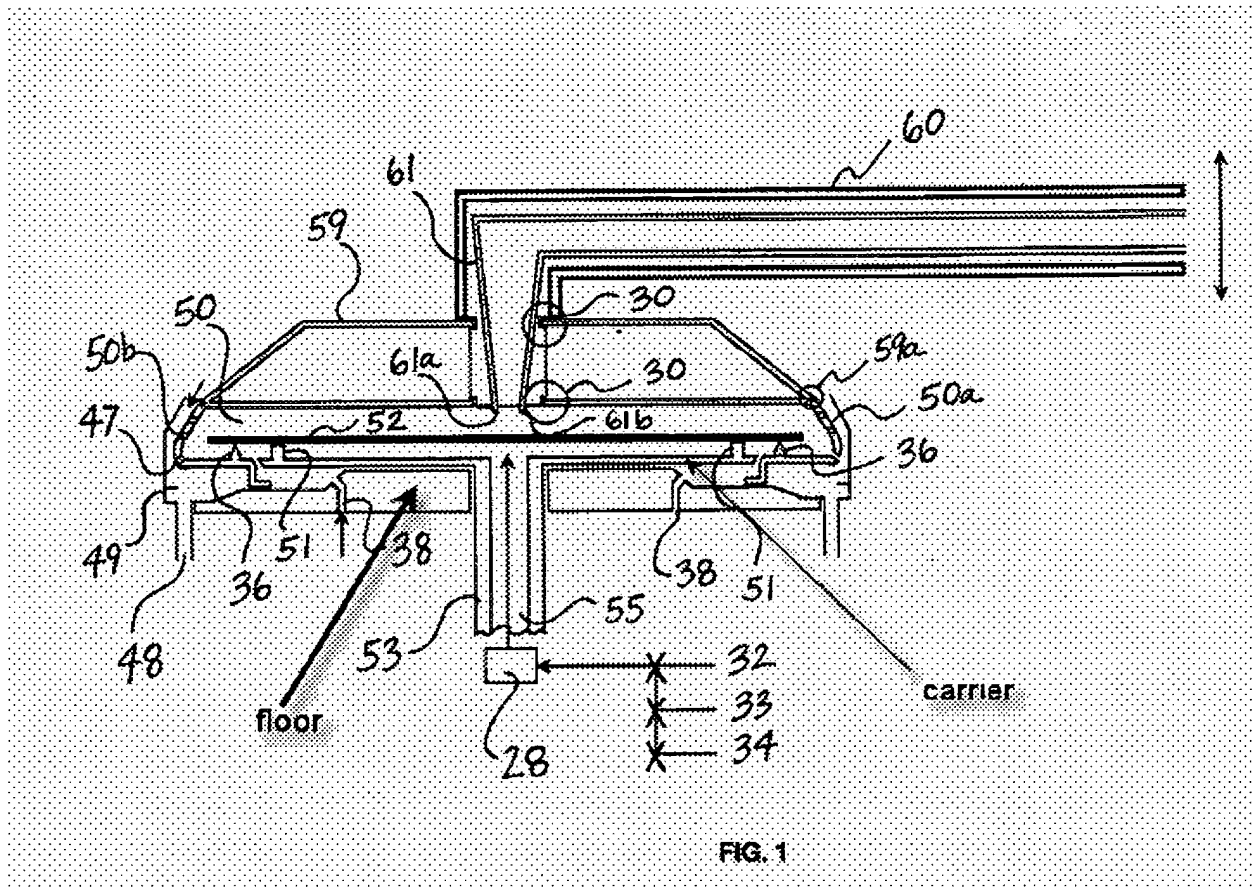
Regarding claim 6, Hung et al discloses (see Fig 1) the liquid catch ring (cover 59, sidewalls 50a and 50b) has radial passages (openings 47), through which the liquid may be conveyed radially outward.

As to claim 7, Hung et al discloses (see Fig 1) the radial passages (openings 47) are located at the points of the liquid catch ring (cover 59, sidewalls 50a and 50b) at which the diameter of inner surface is at least locally greatest.

As to claim 8, in Hung et al the inner surface of the liquid catch ring (cover 59, sidewalls 50a and 50b) is implemented as conical.

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Regarding claim 9, in Hung et al a floor (see attached Fig 1 below), which rises radially inward, is shaped onto the bottom end of the liquid catch ring (cover 59, sidewalls 50a and 50b).



With respect to claim 10, in Tung et al at least one annular chamber (container 49), which is open inward and in which liquid thrown off of the liquid catch ring (cover 59, sidewalls 50a and 50b) may be collected, is positioned around the liquid catch ring (cover 59, sidewalls 50a and 50b).

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As to claim 13, Tung et al discloses that at least one annular chamber (container 49) and the carrier (part of chamber 50 with vacuum contacts 51) are not displaceable in relation to one another in the axial direction.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1- 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takatsuki et al (US 5,656,082) in view of Fujiyama et al (US 5,415,691).

As to claim 1, Takatsuki et al discloses (see Figs 2-3) a device for treating disk-shaped objects using liquids including: a carrier (disc table 20) for receiving the disk-shaped object; and a liquid catch ring (cover 3 with surrounding wall 22a), which is positioned substantially coaxially to the carrier (disc table 20) and is rotatable around the axis of the liquid catch ring (cover 3 with wall 22a), the liquid catch ring (cover 3 with

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wall 22a) being movable relative to the carrier (disc plate 20). Although Takatsuki et al teaches a liquid applying apparatus, a liquid supply device is not disclosed in Takatsuki et al. However, a spin coating apparatus provided with a liquid supply device is well known in the art; for instance - Fujiyama discloses (see Fig 2) a liquid supply device (nozzle 52') for applying liquid onto a disk-shaped object located on the carrier. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a liquid supply device in Takatsuki et al to dispense the coating material onto the substrate.

As to claim 2, Takatsuki et al discloses (see Fig 17 and column 5, lines 62-64) a liquid catch ring (cover 3 with wall 22a) is rotatable in relation to the carrier (disc table 20 rotated by rotary member 2 while the cover is kept from rotating).

Regarding claim 3, Takatsuki et al discloses (see Fig 2) devices (elevating mechanism 5 and elevating arm 52) for axial displacement of carrier (disc table 20) and liquid catch ring (cover 3) in relation to one another.

With respect to claim 4, In Takatsuki et al the carrier (disc table 20) is rotatable.

As to claim 5, in Tung et al the diameter of the inner surface of the liquid catch ring (cover 3 with wall 22a) varies in the axial direction.

Regarding claim 6, Takatsuki et al discloses that the liquid catch ring (cover 3 with wall 22a) has radial passages (holes 201), through which the liquid may be conveyed radially outward (see Fig 2).

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As to claim 7, in Takatsuki et al the radial passages (holes 201) are located at the points of the liquid catch ring (cover 3 with wall 22a) at which the diameter of inner surface is at least locally greatest.

As to claim 8, in Takatsuki et al the inner surface of the liquid catch ring (cover 3 with wall 22a) is implemented as conical.

With respect to claim 10, Takatsuki et al discloses (see column 9, lines 31-35) at least one annular chamber (holes 41), which is open inward and in which liquid thrown off of the liquid catch ring (cover 3 with wall 22a) may be collected, is positioned around the liquid catch ring (cover 3 with wall 22a).

As to claim 13, in Takatsuki et al the at least one annular chamber (holes 41) and the carrier (disc table 20) are not displaceable in relation to one another in the axial direction.

Allowable Subject Matter

8. Claims 11-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: Nakamori et al (US 6,589,338) discloses (see Figs 3-4) a device for processing substrate comprising at least two annular chambers (44 and 45), wherein the openings facing inward are positioned one below the other, and devices (47, 153) provided for axial displacement of chambers in relation to the substrate. However in Nakamori et al

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a catch ring rotating around the axis is not included. There would not have been motivation to combine Nakamori's device having non-rotating catch rings with a device such as shown by, Hang et al or Takatsuki et al having a rotatable catch ring with at least one annular chamber. Prior art of record does not disclose or suggest a device for treating disk-shaped objects using liquids including, among others, a liquid catch ring which is rotatable around the axis of the liquid catch ring and at least two annular chambers, wherein the openings facing inward are positioned one below the other, and devices provided for axial displacement of chambers and liquid catch ring in relation to one another.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yewebdar T. Tadesse whose telephone number is (571) 272-1238. The examiner can normally be reached on Monday-Friday 8:00 AM-4: 30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



YTT